

STUDIES IN AUSTRALIAN THYSANURA.

No. 3. CAMPODEIDAE.

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Our knowledge of the Australian species of this family of the Apterygota is entirely due to the paper published by Prof. F. Silvestri in 1931 (Boll. Lab. Zool. Portici.) when he recorded *Campodea fragilis* Meinert (a European species) from Victoria, and described *Campodea tillyardii* from South Australia and New South Wales, *Campodea froggattii* from Tasmania, and *Metriocampa leae* from Tasmania.

Previously Tillyard (New Zealand, J. Sc., T., vol. vii, p. 242, 1924) had described *Campodea philpotti* from Nelson, New Zealand, but in the above paper Silvestri referred it to the genus *Metriocampa*, and also recorded *C. fragilis* Murt. from New Zealand. In 1903 (Boll. Lab. Zool. Portici., vol. xi, p. 170) Silvestri split his genus *Metriocampa* into three subgenera and designated *M. leae* as the type of the subgenus *Notocampa*.

In the present paper two new species of *Campodea*, *C. tonnoiri*, *C. waterhousei*, one of *Metriocampa* (*Notocampa*), *M. (N.) westraliense*, and a new subgenus of *Metriocampa*, *Austrocampa*, for *M. (A.) spinigera* from Western Australia and its variety *victoriense* from Victoria, are added.

The following key will separate the present known Australian and New Zealand species:—

1. Claws basally with a long fine lateral seta which reaches the tip of the claws and is slightly clubbed apically; claws equal or sub-equal, not unduly broadened basally and without longitudinal striations. 2
Gen. *Campodea* Westd.
 - Claws basally without the above lateral seta, otherwise the same. 6
Gen. *Metriocampa* Silv.
2. The posterior pronotal and mesonotal setae fine and tapering, as are the dorsal setae. 4
 The posterior pronotal and mesonotal setae stronger and stouter than are the dorsal setae, and serrated. 3
3. Mesonotum with two anterior major setae (submedian and sublateral) and one lateral subposterior major seta; metanotum with anterior submedian and lateral subposterior major setae. Cerci from 4th to 5th segment with numerous short setae. Abdominal tergites without anterior submedian major setae; tergite 5 with lateral subanterior, and 6 to 8 with lateral subanterior and posterior sublateral major setae. Antennae 18-22 segmented. 5
C. fragilis Meinert.
 - Mesonotum with only one major seta, that anterior sublateral; metanotum without major setae. Cerci entirely with sparser longer setae. Abdominal tergites without anterior submedian major setae, 7 with lateral subposterior, and 8 with lateral subposterior and sublateral subposterior major setae. Antennae 20-segmented. 3
C. tonnoiri, sp. n.
4. The meso- and metanotum with a single major seta at the lateral posterior angles. 5
 Pronotum with three anterior (submedian, sublateral and lateral major setae) and three posterior sublateral major setae; mesonotum with two anterior (submedian and sublateral) and three posterior sublateral major setae; metanotum with one anterior submedian and two posterior sublateral major setae. Tergites of abdomen without anterior submedian major setae, 8-10 with one lateral posterior major seta. Antennae 25-26 segmented. 3
C. waterhousei, sp. n.

5. Antennae 19-22 segmented. Abdominal tergites 8-9 with posterior lateral major setae.
C. tillyardii Silv.
Antennae 14-15 segmented. Abdominal tergite 8 without posterior lateral major seta.
C. froggattii Silv.
6. Major setae of thoracic tergites long and attenuated. Pronotum with 3 + 3 major setae (lateral, sublateral and submedian), mesonotum with 3 + 3 major setae.
Gen. *Metriocampa* Silv.
Subgen. *Notocampa* Silv. 7
Major setae of thoracic tergites short, stout, serrated but not attenuated, not more than twice as long as the dorsal setae which are also stout and not attenuated. Pronotum with 3 + 3 major setae and mesonotum with 2 + 2 or 3 + 3; meta-notum with 1 + 1.
Gen. *Metriocampa* Silv.
Subgen. **Austrocampa** s. gen. nov.
7. First abdominal tergite without major setae, second with 1 + 1, third and fourth with 2 + 2, fifth to ninth with 3 + 3.
M. (N.) philpotti (Till.).
(New Zealand)
First and second abdominal tergite without major setae, third with 1 + 1, fourth with 2 + 2, fifth to eighth with 3 + 3.
M. (N.) leae (Silv.).
First and second abdominal tergite without major setae, with 1 + 1, fourth to eighth with 3 + 3, ninth with 2 + 2.
M. (N.) westraliense, sp. n.
8. Mesonotum with only 2 + 2 major setae (sublateral and submedian).
M. (A.) spinigera, sp. n.
Mesonotum with 3 + 3 major setae (lateral, sublateral and submedian).
M. (A.) spinigera v. **victoriense**, v. nov.

CAMPODEA FRAGILIS Meinert.

This introduced species can be identified from the above key. It is not uncommon in garden soil around Adelaide, South Australia, and the writer has seen numerous specimens from there.

CAMPODEA TILLYARDII Silv.

A very widely distributed species in Australia, and occurring also in New Zealand. In the South Australian Museum are specimens from the following localities:—

South Australia: Glen Osmond, March, 1933, August 11, 1934; Adelaide, May, 1933; Sellick's Beach, August, 1937; Nepabuna, Flinders Range, May, 1937. Western Australia: Armadale, August 1931, June, 1932; Kilmessock, September, 1932; Kalamunda, June, 1931; Lesmurdie, 1930. Victoria: Studley Park, August, 1931. New South Wales: Tuross River, May, 1936. Tasmania: Risdon, May, 1937. Queensland: Brisbane, October, 1934. New Zealand, Manurewa, Auckland, August, 1932.

CAMPODEA FROGGATTII Silv.

I have not met with any specimens that I can refer to this species.

Campodea tonnoiri, sp. n.

(Text fig. 1, A-K.)

This new species was found in garden soil in Adelaide, South Australia, in March, 1933, associated with *C. fragilis* and *C. tillyardii*. It can be distinguished from the other species by the key.

Description—♀, whitish. Dorsal body setae short, simple and pointed posterior marginal setae of thoracic segments slightly longer, thicker and serrated (cf. fig. 1, A, B, J), major setae much longer, serrated and attenuated (cf. fig. 1,

A, B, I). Antennae 20-segmented, setae and sensillae as in fig. 1, E, sensillae present on segments 3-6.

Prothorax (fig. 1, A) with 3 + 3 anterior major setae (submedian, sublateral and lateral); mesothorax (fig. 1, B) with only 1 + 1, anterior sublateral; metanotum without. Claws simple, arcuate, with fine lateral appendage which is apically slightly clavate as in genus (fig. 1, G). Abdomen: tergites 1-6 without major setae, 7 with 1 + 1 lateral major setae, 8-9 with 2 + 2, lateral and sublateral subposterior, 10 with 5 + 5, two anterior submedian and three subposterior (fig. 1, D). Sternite of first abdominal segment as in fig. 1, f. Cerci 13-14 segmented, with long setae, the longer ones serrated (fig. 1, K). Stylets normal (fig. 1, H).

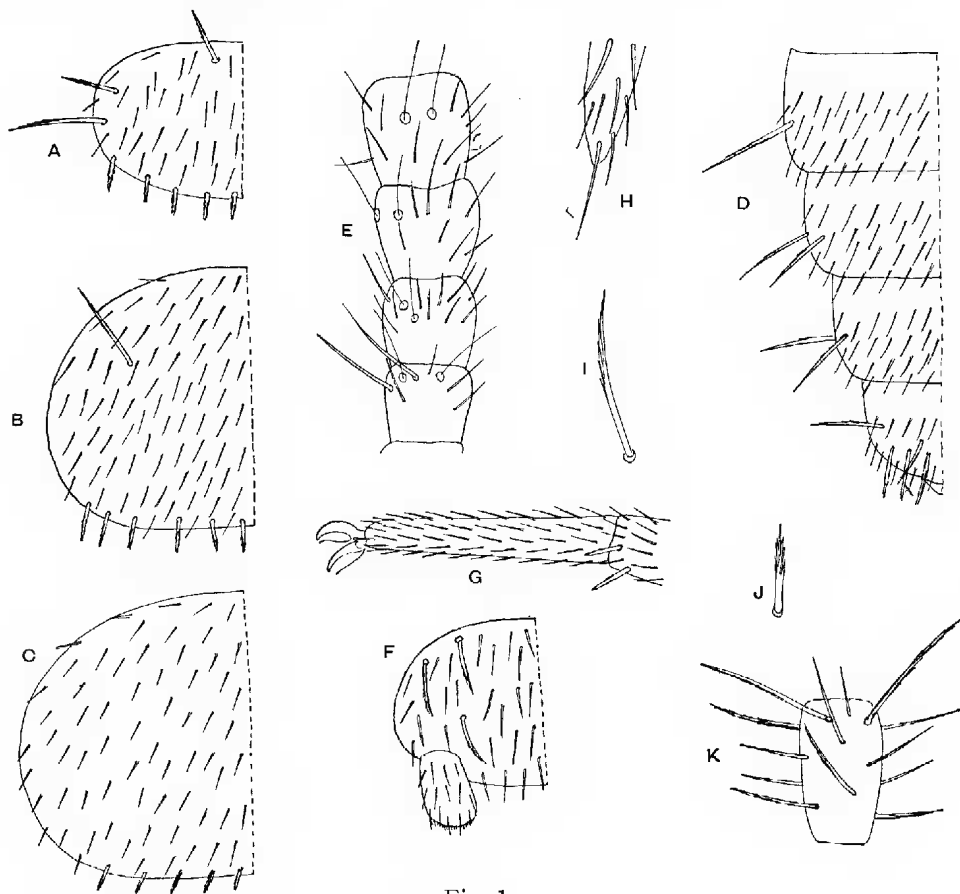


Fig. 1.

Length—Body, 2.46 mm; width across metathorax, 0.4 mm.; antennae, 1.35 mm.; leg III, 0.8 mm.; cerci, 1.0 mm. Length of setae: prothorax, ordinary dorsal, .025 mm; posterior marginal, .037 mm; lateral major, .08 mm.; lateral of seventh abdominal tergite, .08 mm.

Habitat—Holotype ♀ and allotype ♂ from garden soil, Adelaide, South Australia, March, 1933 (H. W.).

Remarks—This species is near to *C. emeryi* Silv. from Europe, but differs in the abdominal major setae and the antennal segments. It is dedicated to Mr. A. L. Tonnoir, Senior Entomologist, C.S.I.R., Canberra, F.C.T.

Campodea waterhousei, sp. n.

(Text fig. 2, A-J.)

Description—Length, to 3.0 mm. Colour, whitish. Antennae 25-26 segmented; segments 4-6 with the usual sensillae (fig. 2, E). Dorsal setae long, slender and attenuated; posterior marginal setae of thoracic segments as on the dorsum.

Prothorax (fig. 2, A) with 6 + 6 major setae, three anterior (submedian, sublateral and lateral) and three posterior; mesonotum (fig. 2, B) with 5 + 5, two anterior (submedian and sublateral) and three lateral-posterior; metanotum (fig. 2, C) with 3 + 3, one anterior submedian, and two lateral-posterior.

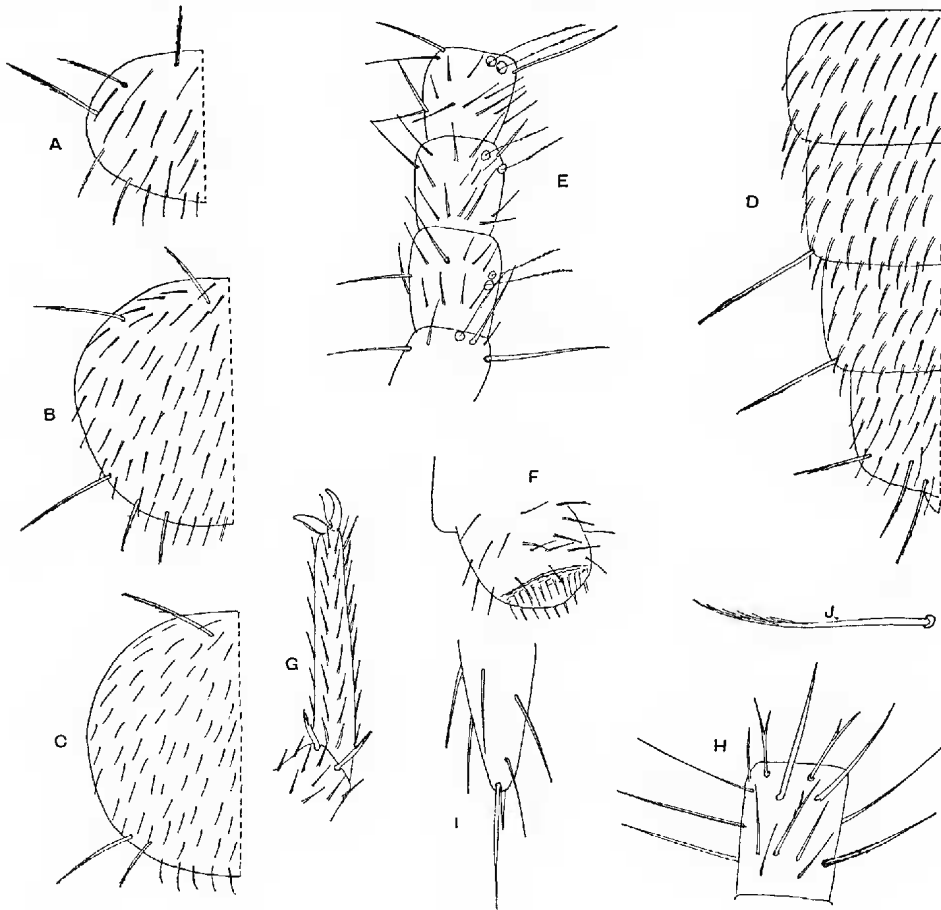


Fig. 2.

Abdominal tergites (fig. 2, D) 1-7 without major setae, 8-9 with 1 + 1, lateral-posterior, 10 with 3 + 3, one sublateral subposterior, one submedian subposterior, and one posterior submedian. Claws normal for the genus. First abdominal sternite of ♀ as in fig. 2, F. Stylets normal (fig. 2, I). Cerci 13-segmented with long setae, a few of which on each segment are bi- or trifurcate (fig. 2, H).

Length of cerci almost 2.0 mm.; pronotal major setae, lateral, 0.15 mm.; sublateral, 0.07 mm.; submedian, 0.09 mm.; and lateral posterior, 0.07 mm.; lateral posterior setae of tergite 8, 0.15 mm.; sensillae of antennae, 0.15 mm.

Habitat—A number of specimens from Killara, New South Wales, collected by Mr. H. Day, April 8, 1936.

Remarks—This species is abundantly distinct in the chaetotaxy. It is named in honour of Dr. G. Waterhouse, the eminent Australian entomologist of Killara, New South Wales.

METRIOCAMPA (NOTOCAMPA) LEAE Silv.

I know of no further records of this species other than the original discovery.

Metriocampa (Nctocampa) westraliense, sp. n.

(Text fig. 3, A-H.)

Description—Colour, creamy white. Antennae 25-segmented, segments 3-4 with the usual sensillae (fig. 3, D). Dorsal setae long, thin and attenuated, on posterior-margin of thoracic tergites but little longer than on dorsum. Pronotum (fig. 3, A) with 3 + 3 anterior major setae (submedian, sublateral and lateral), mesonotum (fig. 3, B) with 3 + 3 (submedian, sublateral and lateral), metanotum (fig. 3, C) with 2 + 2 (submedian, anterior and lateral subposterior). Claws simple (fig. 3, F), arcuate, without lateral seta. Abdominal tergites (fig. 3, E) 1 and 2 without major setae, 3 with 1 + 1 sublateral subposterior,

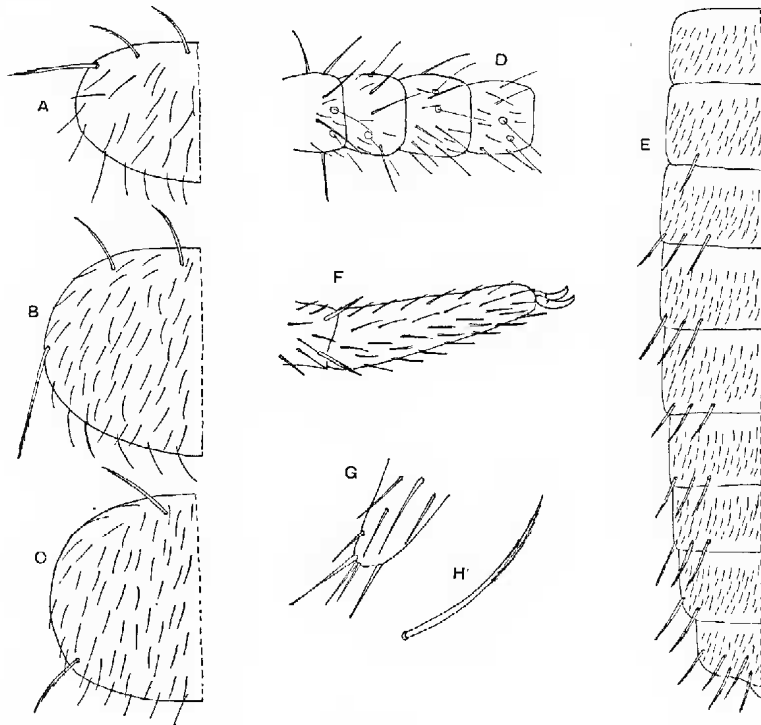


Fig. 3.

4-8 with 3 + 3 sublateral subposterior, 9 with 2 + 2 sublateral subposterior, 10 with 5 + 5, three subposterior and two posterior. Stylets normal (cf. fig. 3, G).

Length of body, 5.0 mm.; width of metanotum, 0.6 mm.; leg III, 1.5 mm.; pronotal major setae, .17 mm. Cerci incomplete.

Habitat—Type specimen from Kelmscott, Western Australia, September 9, 1930 (H. W.).

Remarks—This species can be distinguished from its allies, *M. (N.) leae* and *M. (N.) philpotti*, as detailed in the key.

Austrocampa, subg. n.

Allied to *Metriocampa (Tricampa)* Silv. but differs in that the dorsal body setae are short and stout and blunt-ended. The dorsal thoracic major setae are similarly stout and scarcely attenuated and only about twice as long as the dorsal setae. The pronotum has three anterior major setae (submedian, sublateral, and lateral), the mesonotum normally two (submedian and sublateral) (in the variety also with a lateral one), metanotum with one anterior submedian major setae. The claws, stylets, etc., normal. In the subgenotype the male cerci are furnished basally on inside with strong spines.

In the normal chaetotaxy of the mesothorax, the species would fall into *Tricampa* Silv., but that of the variety from Victoria would place it in *Notocampa* Silv. Evidently then, in this case at least, the mesonotal chaetotaxy is not to be entirely relied upon. On the other hand, the peculiar nature of the dorsal setae and the thoracic major setae, would seem to differentiate it as a distinct subgenus.

Metriocampa (Austrocampa) spinigera, sp. n.

(Text fig. 4, A-C, E-N.)

Description—Colour, creamy white. Dorsal body setae short, stout and apically bluntly pointed; posterior thoracic marginal setae only slightly serrated

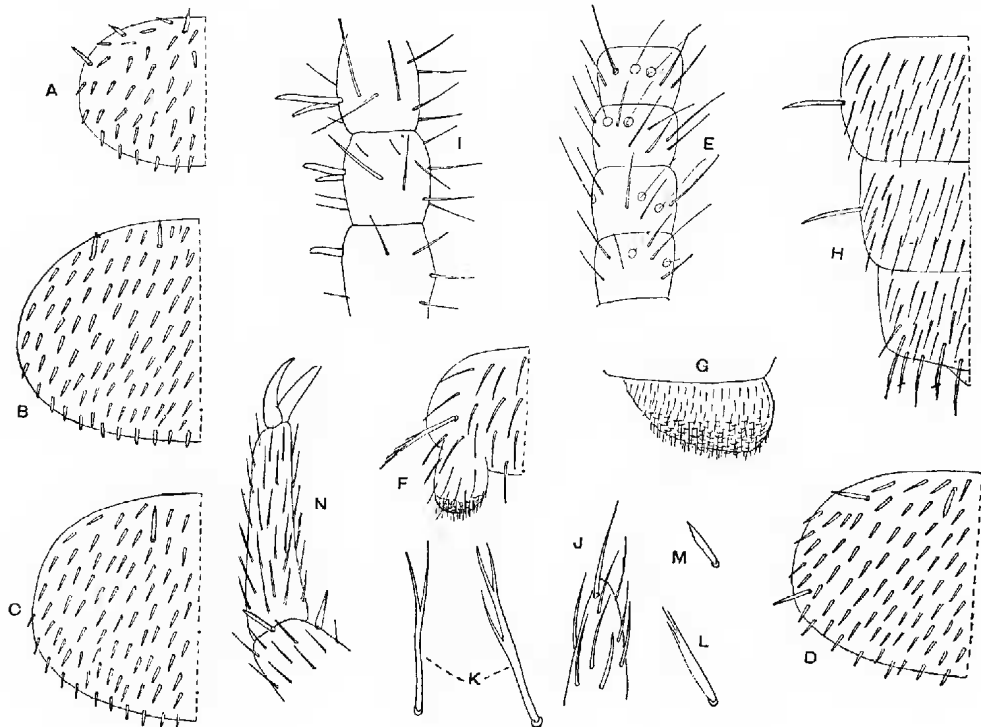


Fig. 4.

apically (cf. fig. 4, M); major thoracic setae not very much longer, and apically serrated (cf. fig. 4, L). Antennae 16-17 segmented, segments 3-6 with usual sensillae (cf. fig. 4, E). Pronotum (fig. 4, A) with 3 + 3 anterior major setae

(submedian, sublateral, and lateral); mesonotum (fig. 4, B) with 2 + 2 (submedian and sublateral); metanotum (fig. 4, C) with 1 + 1 (submedian). Abdominal tergites without major setae on 1-7, 8 and 9 with 1 + 1 medio-lateral, 10 with 6 + 6, three posterior and three subposterior; abdominal sternites with the major setae long and attenuated, 1 with 1 + 1, 2-9 with 3 + 3 subposterior, 8-9 also with 1 + 1 lateral, those on 2-7 bifurcate (fig. 4, K), on 8-10 trifurcate. Sternite 1 of ♂ (fig. 4, G), ♀ (fig. 4, F). Cerci 11-segmented, apical segments as long as the three basal ones, in ♂ the three basal segments armed on inside with strong spines (fig. 4, I) 1 : 2 : 2. Stylets as in fig. 4, J. Claws simple, slightly arcuate, without lateral basal seta. Length of body, 3.0 mm.; width of metanotum, 0.5 mm.; pronotal major setae, .075 mm.; major setae of abdominal tergites, 0.087 mm.; stylets, 0.09 mm. to tip of apical seta.

Habitat—A number of specimens from under ti-tree bark in a swamp at Denmark, Western Australia, October, 1930 (H. W.); similarly in the Porongorups, Western Australia, October, 1932 (H. W.).

var. **victoriense**, v. nov.

(Text fig. 4, D.)

Differs from the typical form only in that the mesonotum is furnished with a lateral major seta, as well as the two anterior ones.

Habitat—Under a fallen log at Fern Tree Gully, Victoria, January, 1937 (H. W.).